

We claim:

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- 5 1. In a process for manufacture of tufted carpets comprising steps that comprise adhering to a stitched side of a tufted backing a plurality of stitches of face yarn comprising a plurality of filaments by cooling in contact with the stitched side a thermoplastic binder comprising a softened or melted thermoplastic resin to solidify the resin, the improvement comprising steps that
- 10 comprise applying to a plurality of stitches, before the resin solidifies, a stitch bind composition comprising a liquid component that boils or vaporizes at a temperature such that it can be removed by heating below a temperature at which the tufted backing is damaged by heat and an organic polymer component that bonds
- 15 filaments of the stitches on removal of the liquid component; and, after applying the stitch bind composition but before the resin solidifies, heating the stitch bind composition to substantially remove the liquid component without damaging the tufted backing.
- 20 2. The process of claim 1 wherein the stitch bind composition is a solution, suspension or emulsion comprising the organic polymer component and the liquid component.
3. The process of claim 1 wherein organic polymer content of the stitch bind composition is about 5 to about 60 wt% of the composition.
- 25 4. The process of claim 1 wherein the stitch bind composition has a viscosity of about 0.5 to about 3000 cps.
- 30 5. The process of claim 1 wherein the liquid component of the stitch bind composition comprises an aqueous liquid.
6. The process of claim 1 wherein the stitch bind composition is applied to the stitched side of the tufted
- 35 backing as a spray.
7. The process of claim 1 wherein the stitch bind composition is applied to the stitched side of the tufted backing as a foam.

8. The process of claim 1 wherein the stitch bind composition is applied to the stitched side of the tufted backing as a froth.

9. The process of claim 1 wherein the tufted
5 backing comprises a woven polypropylene fabric tufted with face yarn.

10. The process of claim 9 wherein the face yarn comprises nylon filaments.

11. The process of claim 9 wherein the face yarn
10 comprises polyester filaments.

12. The process of claim 9 wherein the face yarn comprises polypropylene filaments.

~~Sub 37~~ 13. The process of claim 1 wherein the stitch bind composition is applied to the stitched side in an amount
15 effective to provide about 0.2 to about 3 osy of the organic polymer component or residue thereof to the stitched side.

14. The process of claim 1 wherein the organic polymer component comprises a film-forming organic
20 polymer.

15. The process of claim 1 wherein the organic polymer component comprises a thermoplastic polymer.

16. The process of claim 1 wherein the organic polymer component comprises a crosslinkable organic
25 polymer.

17. The process of claim 16 wherein the stitch bind composition comprises a crosslinking agent for the organic polymer.

18. The process of claim 1 wherein the organic
30 polymer component comprises an olefin-unsaturated acid, olefin-unsaturated acid ester or olefin-diene copolymer.

19. The process of claim 18 wherein the organic polymer component comprises an ethylene acrylic acid copolymer.

20. The process of claim 18 wherein the organic
35 polymer component comprises a styrene acrylate copolymer.

21. The process of claim 18 wherein the organic polymer component comprises a carboxylated styrene butadiene copolymer.

22. The process of claim 1 wherein cooling the softened or melted resin in contact with the tufted backing is conducted with the softened or melted resin also in contact with an additional backing.

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23. A process for manufacture of carpets comprising the steps of providing a tufted backing having a stitched side that has a plurality of stitches of face yarn comprising filaments, wherein filaments of a plurality of the stitches are bonded with an organic polymer;
10 contacting the stitched side of the tufted backing with a thermoplastic binder comprising a thermoplastic resin that softens or melts at a temperature below a temperature at which the tufted backing is damaged by heat or that, when softened or melted, can contact the
15 tufted backing without such damage; heating the thermoplastic binder to soften or melt the resin without damaging the tufted backing; and cooling the backing with softened or melted resin in contact with the stitched side to solidify the resin.

20 24. In a process for making carpets that comprises steps comprising:
providing a tufted backing comprising a backing and having a pile side and an opposite stitched side, wherein the pile side has a plurality of tufts
25 of face yarn that comprise a plurality of filaments and the stitched side has a plurality of stitches of the face yarn;

30 contacting the stitched side of the tufted backing with a thermoplastic binder that comprises a thermoplastic resin that softens or melts at a temperature below a temperature at which the tufted backing is damaged by heat or that, when softened or melted, can contact the tufted backing without such damage;

35 heating the thermoplastic binder to soften or melt the thermoplastic resin without damaging the tufted backing; and

cooling the thermoplastic binder with the softened or melted resin thereof in contact with at

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least the stitched side of the tufted backing to
solidify the thermoplastic resin;
the improvement comprising steps that comprise:

5 applying to a plurality of stitches, before the
softened or melted resin solidifies, a stitch bind
composition that comprises a liquid component that
boils or vaporizes at a temperature such that it can
be removed by heating below a temperature at which
the tufted backing is damaged by heat and an organic
10 polymer component that bonds filaments of the
stitches on removal of the liquid component; and
after applying the stitch bind composition but
before the softened or melted resin solidifies,
heating the stitch bind composition to remove the
15 liquid component without damaging the tufted
backing.

25. A process for making carpets comprising steps
that comprise:

20 adhering to a stitched side of a tufted backing
a plurality of stitches of face yarn comprising a
plurality of filaments by cooling in contact with
the stitched side a binder comprising a softened or
melted thermoplastic resin to solidify the resin;

25 applying to a plurality of the stitches, before
the resin solidifies, a stitch bind composition
comprising a liquid component that boils or
vaporizes at a temperature such that it can be
removed by heating below a temperature at which the
tufted backing is damaged by heat and an organic
30 polymer component that bonds filaments of the
stitches on removal of the liquid component; and

35 heating the stitch bind composition, after
application thereof to the stitches and before the
resin solidifies, to remove the liquid of the stitch
bind composition.

26. A process for making a tufted carpet comprising
steps that comprise

providing a tufted backing comprising a backing
and face yarn comprising a plurality of filaments,

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wherein face yarn penetrates the backing and forms a pile surface comprising a plurality of tufts on one side of the backing and a plurality of stitches on an opposite, stitched side of the backing;

5 applying to the stitched side of the tufted backing and in contact with a plurality of the stitches a stitch bind composition comprising a liquid component that boils or vaporizes at a temperature such that it can be removed by heating
10 below a temperature at which the tufted backing is damaged by heat and an organic polymer component that bonds filaments of the stitches on removal of the liquid component;

15 contacting the stitched side of the tufted backing with a binder comprising a thermoplastic resin that softens or melts at a temperature below a temperature at which the tufted backing is damaged by heat or that, when softened or melted, can
20 contact the tufted backing without such damage;

25 heating the tufted backing in contact with the stitch bind composition to remove the liquid component without damaging the tufted backing;

 heating the binder to soften or melt the thermoplastic resin without damaging the tufted
25 backing; and

 cooling the binder with the softened or melted resin thereof in contact with the stitched side of the tufted backing to solidify the resin.

27. A process for manufacturing carpets comprising
30 steps that comprise

 providing a tufted primary backing having a pile side comprising face yarn tufts and an opposite side having a plurality of stitches of face yarn;

35 applying to a plurality of the stitches a stitch bind composition comprising a liquid component that boils or vaporizes at a temperature such that it can be removed by heating below a temperature at which the tufted backing is damaged by heat and an organic polymer component that bonds

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filaments of the stitches on removal of the liquid component;

5 contacting the tufted primary backing, an additional backing and a binder comprising a thermoplastic resin that softens or melts at a temperature below a temperature at which the tufted primary backing and the additional backing are damaged by heat or that, when softened or melted, can contact the tufted primary backing and the additional backing without such damage, to form an intermediate structure having binder disposed between the stitched side of the tufted primary backing and the additional backing;

10 heating the tufted primary backing or the intermediate structure after application of the stitch bind composition to remove the liquid component without damaging the tufted primary or additional backing;

15 heating the binder to soften or melt the thermoplastic resin without damaging the tufted backing or the additional backing; and

20 cooling the intermediate structure with the thermoplastic resin in softened or melted form to solidify the resin.

25 28. Tufted carpet comprising a backing, face yarn comprising a plurality of filaments, an organic polymer component and a thermoplastic binder, wherein the face yarn penetrates the backing such that a plurality of tufts of the face yarn project from a surface of the backing and a plurality of face yarn stitches are disposed on an opposite surface of the backing, a plurality of filaments of the stitches are bonded by the organic polymer component, and a plurality of stitches are bonded within the carpet with the thermoplastic binder.

30 29. The carpet of claim 28 further comprising a secondary backing that is bonded to the stitched surface of the backing with the thermoplastic binder.

31. Cut pile carpet according to claim 28 having a tuft bind strength of at least about 2 pounds.

33. Carpet according to ~~claim~~ 28 containing less than about 3 osy crosslinked polymer solids.

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